8-6 Conic Sections

$Ax^2 + Bxy + Cy^2 + Dx + Ey + F = 0$

$Ax^2 + Bxy + Cy^2 + Dx + Ey + F = 0$

If A = 0 or C = 0, but not both, what type of graph is it?

parabola

$Ax^2 + Bxy + Cy^2 + Dx + Ey + F = 0$

If A = C , what type of graph is it?

circle

$Ax^2 + Bxy + Cy^2 + Dx + Ey + F = 0$

If A and C have the same sign, but $A \neq C$, what type of graph is it?

ellipse

$Ax^2 + Bxy + Cy^2 + Dx + Ey + F = 0$

If A and C have the different signs, what type of graph is it?

hyperbola

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33-37, 13, 14, 20, 21

Without writing the equation in standard form, state whether the graph of each equation is a *parabola*, *circle*, *ellipse*, or *hyperbola*.

33. $x^2 + y^2 - 8x - 6y + 5 = 0$
34. $3x^2 - 2y^2 + 32y - 134 = 0$
35. $y^2 + 18y - 2x = -84$
36. $7x^2 - 28x + 4y^2 + 8y = -4$
37. $5x^2 + 6x - 4y = x^2 - y^2 - 2x$
38. $2x^2 + 12x + 18 - y^2 = 3(2 - y^2) + 4y$

Write each equation in standard form. State whether the graph of the equation is a *parabola*, *circle*, *ellipse*, or *hyperbola*. Then graph the equation.

13. $4x^2 + 2y^2 = 8$
14. $x^2 = 8y$
20. $x^2 + y^2 + 6y + 13 = 40$
21. $x^2 - y^2 + 8x = 16$